

APPENDIX 4

DEMILITARIZATION REQUIREMENTS

FOR MUNITIONS LIST ITEMS

GENERAL INSTRUCTIONS FOR USING THIS APPENDIX:

1. This Appendix is designed to both assist ICA personnel in the assignment of demilitarization codes and to provide instructions regarding the method and degree of that process. Each Category in the Appendix corresponds to the same (and in some cases additional) Category in the USML. Each Category is further delineated, by paragraph, as follows:

PARAGRAPH A: Items which are identified on the USML as SME and require total destruction (Demilitarization Code "D").

PARAGRAPH B: Items which are identified on the USML as SME and require key point destruction (Demilitarization Code "C").

PARAGRAPH C: Items which are identified on the USML, but are not SME, that have been identified as critical or sensitive to DoD and/or the U.S. Government and require either total or key point destruction (Demilitarization Code "E").

PARAGRAPH D: All other items identified on the USML that require only TSCs at time of disposition.

PARAGRAPH E: Method and degree of demilitarization required.

2. Additional basic principles to be applied when assigning or making determinations on demilitarization codes:

a. Classification as an MLI takes precedence over any other classification. After an item has been determined not to meet the criteria of an MLI, it must then be reviewed to determine if it is an SLI (Demilitarization Code "Q").

b. An item is considered to be applicable to the USML when it has been specifically designed, modified or configured for military use, has a military capability or utility and either has or contributes to the offensive or defensive capability of a weapons system/sub-system (see Chapter II, paragraph B., this manual). Items which are identical in design, structure, composition and utility to an equivalent item in the commercial market, and do not meet the criteria for an SLI, will be coded Demilitarization Code "A". (Note: The application of "Army green" or Navy gray" paint does not qualify an item as MLI.)

c. All "common hardware" (e.g.: nuts, bolts, screws, brackets, etc.) and all wiring, regardless of design or configuration, will be coded Demilitarization Code "A".

d. MLIs that are not designated as SME or identified in paragraph C in each category will normally be assigned Demilitarization Code "B".

3. Assistance in the use of this Appendix or in coding determination is available from the DRMS Demilitarization Office (see Chapter I, Attachment I, this manual.)

**CATEGORY I. SMALL ARMS WEAPONS, PARTS,
AND ACCESSORIES**

(CATEGORY I and IV - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D":

All nonautomatic, semiautomatic, and automatic guns and other weapons up to and including 50 caliber and all metallic components and parts therefor except as listed in subparagraph D. below.

Shotguns and all metallic components and parts therefor except as listed in subparagraph D. below.

Shoulder fired grenade launchers and all components and parts therefor except as listed in subparagraph D. below.

Man portable rocket launchers and all components and parts therefor except as listed in subparagraph D. below.

Individually operated weapons which are portable and/or can be fired without special mounts or firing devices and which have potential use in civil disturbances and are vulnerable to theft and all metallic components and parts therefor except as listed in subparagraph D. below.

Pyrotechnic pistols and other ground signal projectors and all metallic components and parts therefor except as listed in subparagraph D. below.

Rifle grenade launchers and all components and parts therefor except as listed in subparagraph D. below.

Insurgency-counterinsurgency type firearms or other weapons having a special military application (e.g., close assault weapons systems), regardless of caliber, and all metallic component and parts therefor except as listed in subparagraph D. below.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C" (NOTE: Components, parts, etc. listed below as a "key point" would themselves be assigned Demilitarization Code "D"):

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Gunmounts (including bipods and tripods). Key points are all attachment points/fittings and moveable joints.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical/sensitive nature that requires total or key point destruction worldwide or as indicated. These items and their key points are normally assigned a Demilitarization Code "E":

Military bayonets.

Silencers, suppressors and mufflers (total destruction).

Riflescopes and all types of telescopic and optical sights including those designed for night sighting and viewing (key point destruction). Key points are attachment points/fittings, lenses, infrared source and as otherwise indicated by the ICA.

Magazines with a capacity of 10 or more rounds.

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B":

Magazines and ammunition clips with a capacity of less than 10 rounds for items in this category.

All other technical data and defense services directly related to any defense article enumerated in this category.

Parts and components not meeting the definition of a Defense Article (Chapter II, subparagraph B.1.) will be coded Demilitarization Code "A".

E. Method and degree of demilitarization.

1. **FOR ITEMS LISTED IN PARAGRAPH A ABOVE**, the preferred method of demilitarization under local expanded demilitarization procedures is by torch cutting utilizing a cutting tip that displaces at least 1/2 inch of metal. All cuts will completely sever the item and be made in accordance with instructions applicable to the items being demilitarized as depicted in appropriate figures contained in Appendix 7 and the DoD Demilitarization Bulletin Board. Shearing, crushing, deep water dumping or melting may be utilized when such methods of demilitarization are deemed more cost effective and/or practicable and are authorized by appropriate authority.

2. **MACHINE GUNS** will be demilitarized by torch cutting utilizing a cutting tip that displaces at least 1/2 inch of metal or shearing the receiver in a minimum of two places or by crushing in a hydraulic or similar type press. The barrel will be torch cut, sheared or crushed in the chamber area and in two or more places to the extent necessary to prevent restoration. If the shearing or crushing method is used, the trunnion block and side frame must be completely cut through, broken or distorted to preclude restoration to a usable condition.

3. **RECEIVERS** will be demilitarized by torch cutting in a minimum of two places utilizing a cutting tip that displaces at least 1/2 inch of metal or crushed to the extent necessary to preclude restoration to a usable condition.

4. **BOLTS AND BARRELS** will be demilitarized by torch cutting utilizing a cutting tip that displaces at least 1/2 inch of metal or crushed to the extent necessary to preclude restoration to a usable condition.

5. **ACCESSORIES**, i.e.; silencers and mufflers, rifle grenade launchers, riflescopes and all types of telescopic and optical sights including those designed for night sighting and viewing, and gunmounts (including bipods and tripods) will be demilitarized by breaking, crushing or cutting in a manner which precludes restoration to a usable condition in accordance with instructions applicable to the items being demilitarized as depicted in appropriate figures contained in Appendix 7 and the DoD Demilitarization Bulletin Board.

6. **OTHER METALLIC PARTS**, including M2 conversion kits (fig. 68), will be demilitarized by cutting, crushing or melting.

7. **TECHNICAL DATA** will be demilitarized by burning, shredding or pulping.

CATEGORY II. ARTILLERY AND PROJECTORS

(CATEGORY II - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D":

Pylons, launchers and ejector/release racks for aircraft mounted artillery and projectors.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

Tubes and gun barrels.

Launching rails.

Receivers.

Breechblocks.

Breech chambers.

Breech couplings.

Breech rings.

Breech housings.

Breechyokes.

Breechplugs.

Trunnion blocks.

Firing mechanisms.

Release mechanisms.

Equilibrators.

Recoil mechanisms.

Torpedo tube muzzle and breechdoors.

Turret rings.

Flame thrower operating mechanisms.

Gun mounts.

Gun carriages

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Key points to be demilitarized: Tubes and gun barrels, launching rails, receivers, breechblocks, breech chambers, breech couplings, breechings, breech housings, breechyokes, breechplugs, trunnion blocks, firing mechanisms, release mechanisms, equilibrators, recoil mechanisms, torpedo tube muzzle and breechdoors, turret rings, and flame thrower operating mechanisms, gun mounts and carriages (see paragraph E. below) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Guns over caliber .50.

Howitzers.

Cannons.

Mortars.

Tank destroyers.

Grenade and rocket launchers, other than man portable types.

Recoilless rifles.

Military flame throwers and projectors.

Shipboard rocket launchers.

Torpedo tubes.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Armor plate associated with items in this category (total destruction).

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

All other components, parts, accessories and attachments not enumerated elsewhere in this category.

All other technical data and defense services directly related to any defense article enumerated this category.

E. Method and degree of demilitarization:

NOTE: The figures mentioned below are illustrated in Appendix 7.

1. **BREECHRINGS, BREECH CHAMBERS, BREECH COUPLINGS, BREECHBLOCKS, BREECH HOUSINGS, BREECHYOKES, BREECHPLUGS AND FIRING MECHANISMS** will be cut through with the breechblock in the closed position (fig. 1) and through the firing mechanism (fig. 2). Equivalent cutting of the breechring, breech chambers (fig. 3), breechblock, and firing mechanism as separate items is acceptable.

2. **20MM GUNS** will be demilitarized by torch cutting utilizing a cutting tip that displaces at least 1/2 inch of metal in accordance with figures 38, 39, and 40, to include, as applicable:

a. One cut through body of the receiver to the rear of the cradle with bolt assembly remaining in the weapon if furnished with the assembly.

b. One cut through the heavy portion of the barrel, the gas operating system and recoil spring.

c. Torch the chamber opening in the barrel and forward portion of the bolt, if assembled in weapons, sufficiently to create a metal puddle.

d. 20MM feeder will be demilitarized by cutting, shearing or crushing.

e. Weapon accountability will be dropped on a unit basis after demilitarization has been completed.

3. **RECEIVERS (30MM guns)** will be cut into three sections by cutting through the barrel support section, with a second cut through the slideways.

4. **ROCKET LAUNCHERS AND GRENADE LAUNCHERS:** Extruded and cast aluminum construction lend themselves to destruction by crushing. Crushing will be accomplished by hydraulic or similar press or by placing on a hard surface and flattened by a steel track crawler type vehicle.

5. **RECEIVERS (CASING) (40MM GUN)** (fig. 4) will be cut completely through the casing body assembly near the rammer tray.

6. **BARRELS (GUNS AND HOWITZER)** will be cut into two pieces, the cut being made as near the point of origin of the rifling as possible but not more than one-third of the barrel length from the breech face of the tube (fig. 5). Combat vehicle artillery will be cut just in front of the mantelet or shield (fig. 17).

7. **TRUNNIONS, TRUNNION BEARINGS, AND TRUNNION BEARING CAPS** (not disassembled) will be cut completely through diagonally.

8. **MORTARS** will be cut by torch or crushed (fig. 6).

a. When cutting method is used, the tube will be cut into two pieces, the cut being made one-third of the length of the tube from the cap end. The cap will be cut into three pieces, the cut being made diagonally through the cap.

b. When the crushing method is used, the mortar tube will be crushed (inner surfaces of the tube touching) for a distance of 8 inches, extending from base cap end toward muzzle end of tube. The base cap will be crushed until the largest diameter of cap is out of round by a minimum of 1 inch.

9. **ROCKET LAUNCHERS**, including rails, will be cut, crushed, or broken to render them inoperable and beyond restoration.

10. **MILITARY FLAME THROWER MECHANISMS** will be cut, crushed or broken.

11. HYDROPNEUMATIC RECOIL AND EQUILIBRATOR MECHANISMS. WARNING: Demilitarization of recoil mechanisms and equilibrators must be accomplished by qualified personnel only.

a. Prior to release of hydropneumatic recoil or equilibrator mechanisms (which in a broad sense includes counter-recoil (recuperator) mechanisms) to a DRMO, reserve oil will be drained and nitrogen pressure released by technically qualified personnel in accordance with instructions in the pertinent technical manuals.

WARNING: Oil and nitrogen release valves and drain plugs will be left open during cutting operations.

(1) If the nitrogen pressure cannot be released due to a faulty valve, a one-eighth inch hole will be drilled by technically qualified personnel in the wall of the nitrogen cylinder 6 inches from the nitrogen end (fig. 8) to release the pressure.

WARNING: Extreme caution should be exercised while drilling the hole in the nitrogen cylinder wall. A suitable safety shield should be used to protect personnel from the drill shavings that are expelled from the hole when drill enters the nitrogen cylinder. Protection should also be provided for eyes, face, arms, and hands of personnel performing the operation.

(2) To prevent a possible internal buildup of oxygen and acetylene in the nitrogen cylinder during cutting operations, a one-half inch hole will be drilled 6 inches from the end of the nitrogen cylinder (fig. 8). To perform this operation on the 155MM, 175MM and 8-inch howitzer mechanisms, a section of the cover or housing must be cut away. (Note: If a one-eighth inch hole has been drilled ((1). above), enlarge this hole to one-half inch.)

b. Enlarge the one-half inch hole with a gas-cutting torch by removing a section of at least 2 square inches from the nitrogen or recuperator cylinder as shown in figures 8 and 9.

NOTE: If qualified explosive personnel are available, a satisfactory hole can be made by the use of shaped charge instead of drilling and cutting with a torch.

c. The recoil rod and counter-recoil rod, if present, will be cut completely through and flush with the recoil and counter-recoil cylinder (fig. 10). Hydropneumatic equilibrators such as those on the 155MM and 175MM guns and 8-inch howitzers will be cut as shown in figure 11.

12. HYDROSPRING RECOIL AND EQUILIBRATOR CYLINDER.

a. Drain off oil from hydrospring recoil cylinders. On hydrospring cylinders, cut through cylinder lengthwise, the cut to be 4 inches or more in length and of sufficient depth to cut through at least two coils of the spring (fig. 12). Concentric-type recoil mechanisms will be cut through the cradle in the most accessible area, the cut to be of sufficient length and depth to cut at least two coils of the spring (fig. 13 and 14).

WARNING: Hydrospring recoil and equilibrator mechanisms contain springs under high pressure; therefore, extreme caution must be exercised. Demilitarization must be performed by technically qualified personnel only. No attempt should be made to cut the cylinder in two pieces without prior release of spring tension.

b. In the case of the 40MM automatic gun, proceed as in 1 through 4 below:

(1) Remove the two drain plugs near the front of the recoil cylinder(s) and drain the recoil oil.

(2) At a point just behind the recoil cylinder attaching bracket, cut completely through tube of casing body assembly, recoil cylinder(s), and barrel assembly(s) (if barrel is installed on gun).

(3) *Open top cover(s) and cut longitudinally through top portion of breechring(s) and breechblock(s).*

(4) *At a point between the front and rear loader guides, cut completely through breech casing body(s) and tray(s) (fig. 7).*

c. *In the case of the 37MM automatic gun, cut completely through the gun tube and counter-recoil (recuperator) mechanism and cut completely through the middle of the trunnion bearing, trunnion, and trunnion bearing cap at a 45 degree angle.*

13. **SPRING-TYPE EQUILIBRATORS** *such as the type used on the 105MM howitzers of the M2-series will be cut through both inner and outer spring shown in figure 12.*

14. TORPEDO TUBES.

a. *If the ship is to be scrapped in the United States:*

(1) *The breechring will be removed by cutting or sawing from the torpedo tube barrel. The point of cut in the barrel will be approximately 6 to 12 inches forward from face of breechring.*

(2) *All muzzle and breechdoors will be cut into two pieces of approximately equal sizes.*

b. *If the ship is to be scrapped outside the United States:*

(1) *Remove the breechdoor and cut in half.*

(2) *Remove the rotating breechlocking ring and cut in half.*

(3) *Cut the breech end of the tube approximately 6 to 12 inches from the breechface.*

(4) *Secure the muzzle door operating shaft against movement by pinning it in place.*

15. **GRENADE PROJECTOR MOUNTS, GRENADE MOUNTS,** *as used in M551 armored reconnaissance airborne vehicle will be demilitarized by cutting to destroy the firing solenoid (fig. 15 and 16).*

16. **NAVY GUN MOUNTS, NAVY GUN TURRETS AND OTHER ARMORED ITEMS.** *Cut armor into at least four approximately equal sized pieces to destroy integrity. Cut turret rings in two places.*

17. **TOP CARRIAGES AND BOTTOM CARRIAGES, MOUNTS, AND OUTRIGGERS** *will be cut through below the trunnion bearings.*

18. **PYLONS AND EJECTOR/RELEASE RACKS** *will be demilitarized as shown in figs. 52 and 53.*

19. **TECHNICAL DATA** *will be demilitarized by burning, shredding or pulping.*

F. *As an alternative method of demilitarization, any complete weapons, repair parts and key points included in this Category, which are small enough to fit in the furnace at Rock Island Arsenal (RIA) without cutting, may be demilitarized by melting as outlined in Chapter IV, in the same manner as weapons and parts included in Category I above. Exception is made to equilibrators and recoil mechanisms which will not be demilitarized by melting. The dimensions of the furnace firebox at RIA are: 4 feet 6 inches in diameter by 4 feet deep.*

CATEGORY III. AMMUNITION

(CATEGORY III - U.S. MUNITIONS LIST)

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D". For items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

Ammunition manufacturing and loading machines (except hand loading).

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

Explosives.

Pyrotechnics.

Propellants.

Propellant fillers.

Cartridges.

Toxic material.

Rotating bands.

Incendiary or smoke content.

Military design features

Armor piercing cores and components.

Metallic sabots

B. The following items are designated as SME and require key point demilitarization. They are normally assigned a Demilitarization Code "C". However, for items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

*Key points to be demilitarized: Explosives, pyrotechnics, propellants, propellant fillers, cartridges, toxic material, rotating bands, incendiary or smoke content, **armor piercing cores and components, metallic sabots**, other military design features, and features determined hazardous to the general public (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").*

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Ammunition for the arms listed in Categories I and II of the USML.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E", however for items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

Primers, and components therefore (total destruction).

Ammunition belting and linking machines.

Incendiary ammunition agents (except those having dual military and commercial use) (total destruction).

Detonating devices for ammunition (total destruction).

Ammunition belting and linking machines (key point destruction). Key points are specifically designed dies, blocks, jigs and special tooling.

All compounds specifically formulated for items in this category (except those having dual military and commercial use) (total destruction or neutralization).

Expended cartridge/shell cases, caliber .60 and under, require demilitarization (total destruction) overseas or prior to export from the U.S. only.

Projectiles over 20 mm.

All armor piercing projectiles not enumerated elsewhere.

Reactive armor and components thereof (other than that considered to be AEDA).

NOTE: *Expended cartridge and shell casings over 30MM will be mutilated in the United States, Puerto Rico, the U.S. Virgin Islands, American Samoa, Guam, and the TTPI only if they are known to be defective.*

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

*Ammunition components, including but not limited to powder bags, bullets, jackets, cores and shells (except shotgun shells) **not enumerated above.***

All other components, parts, accessories and attachments not enumerated elsewhere in this category.

All other technical data and defense services directly related to any defense article enumerated in this category.

E. Method and degree of demilitarization: As economically as practicable in accordance with existing environmental standards, safety, and operational regulations, to the point of assuring freedom from explosives, pyrotechnics, propellants, propellant fillers, toxic or incendiary materials, smoke content or design hazard.

1. FOR AMMUNITION PROCURED BY THE DEPARTMENT OF THE ARMY, technical instructions relating to ballistic missiles, large rockets, and ground handling equipment, as published in the

AMCOM Series 43 Technical Manuals, will be furnished by the Commander, U.S. Army Aviation and Missile Command, (AMCOM), ATTN: AMSAM-DSA-WO, Redstone Arsenal, AL 35898-5239.

2. FOR CONVENTIONAL, CHEMICAL, AND ALL OTHER TYPES OF AMMUNITION AND AMMUNITION PECULIAR EQUIPMENT (APE), EXCLUDING LETHAL CHEMICAL AGENTS AND WASTE MUNITIONS, technical instructions will be provided by the U.S. Army Industrial Operations Command, ATTN: AMSIO-SMK, Rock Island, IL 61299-6000.

3. FOR AMMUNITION PROCURED BY THE DEPARTMENT OF THE NAVY, technical instructions will be issued by the Commander, Naval Sea Systems Command or by the Commander, Naval Air Systems Command, Department of the Navy, Washington, D.C., whichever has technical control of the item.

4. FOR AMMUNITION PROCURED BY THE DEPARTMENT OF THE AIR FORCE, technical instructions will be issued by the Engineering and Reliability Branch (MMWR), Ogden Air Logistics Center, Ogden, UT 84056-5609.

NOTE: The figures mentioned below are illustrated in Appendix 7.

5. ARTILLERY/MORTAR AMMUNITION COMPONENTS AND SIMILAR ITEMS OF ALL TYPES (fig 55 through 58) including but not limited to high explosive, practice, inert loaded, incendiary, and smoke fillers. Remove explosive filler from projectile (wash out, burn out, etc.). Remove rotating band or score or deform bourrelet or gas check band or deform fuze cavity threads. Burn propellant unless otherwise instructed to retain for sale or other purposes. Deform fin assembly threads or fin blades. Cartridge cases (not returned to ICA designated contractors) will be deformed by off-center punch-out of primer or split case neck or puncture the lower sidewall with a minimum of 3/4 inch hole or deform lower sidewall, which will prevent chambering, or crush or press. Burn out smoke mixture or detonate smoke canister.

6. OTHER NONEXPLOSIVE FILLED ITEMS which perform a major function essential to the basic mission of the end item. Cut, crush, or process through a deactivation furnace. Burn or cut cartridge case lines and propelling charge bags. Cut, crush burn, or crush aircraft and ground signal cases. Crush or detonate piezoelectric (lucky) elements.

7. INERT LOADED AMMUNITION, PROJECTILES, AND SIMILAR ITEMS OF ALL TYPES loaded with inert filler to simulate service item. Remove rotating band from artillery projectiles and open the closure of the projectile body to expose the inert filler. On items without rotating bands, open the body closure to expose the inert filler and damage the closure surface to prevent reloading or resealing.

NOTE: For inert loaded items (concrete, sand, plaster) a potential explosive safety hazard exists when the internal filler is not exposed or unconfined during burning, melting or cutting. Heat generated from a demilitarization process can cause the filler, moisture and air to expand and burst sealed casings. For this reason, DRMOs will not accept inert loaded items unless the internal filler is exposed and unconfined. The internal filler may be exposed by removal of the fuze well from the cavity, removal of base plates, or by puncturing/drilling holes in the bomb casing.

8. TECHNICAL DATA will be demilitarized by burning, shredding or pulping.

**CATEGORY IV. LAUNCH VEHICLES, GUIDED MISSILES,
BALLISTIC MISSILES, ROCKETS, TORPEDOES, AND COMPONENTS**

(CATEGORY IV - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D". For items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

Ablative materials fabricated or semi-fabricated from advanced composites (e.g., silica, graphite, carbon, carbon-carbon, and boron filaments) that are derived directly from or specifically developed or modified for items in this category.

Non-nuclear warheads.

Missile and space vehicle powerplants.

*Technical data related to the manufacture or production of any defense article
enumerated in subparagraphs A. and B.*

Explosives.

Propellants.

Propellant fillers.

Toxic material.

Rotating bands.

Incendiary or smoke content.

Other military design features, features determined hazardous to the general public and as indicated under paragraph E.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C", however for items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

Key points to be demilitarized: Explosives, propellants, propellant fillers, toxic material, rotating bands, incendiary or smoke content, other military design features, features determined hazardous to the general public and as indicated under paragraph E. below (NOTE: Components, parts, etc., listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Launch vehicles and missile and antimissile systems including but not limited to guided, tactical and strategic missiles, launchers and systems.

Rockets (including but not limited to meteorological and other sounding rockets) as well as launchers for such defense articles.

Torpedoes and depth charges.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E", however for items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

NOTE: For electronic items listed in Categories XI and XII of this Appendix which apply to items in this Category (e.g. fire control), the coding guidance in paragraphs A. and B. of Categories XI and XII take precedence over coding guidance found in this paragraph.

Apparatus, devices and materials for the control, activation, detection, protection, discharge or detonation of launch vehicles, guided missiles, ballistic missiles, rockets, and rocket torpedoes (total destruction).

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Specifically designed key components, parts and accessories, attachments and associated equipment not otherwise enumerated above.

All other technical data and defense services directly related to any defense article enumerated this category.

E. Method and degree of demilitarization: As economically as practicable in accordance with existing environmental standards, safety and operational regulations, to the point of assuring freedom from explosives, toxic or incendiary materials, smoke content or design hazard.

1. FOR ITEMS PROCURED BY THE DEPARTMENT OF THE ARMY, technical instructions relating to demilitarization of guided and ballistic missiles, warheads, large rockets, and associated equipment will be furnished by the U.S. Army **Aviation and Missile Command**, Redstone Arsenal, Alabama.

2. FOR ALL OTHER TYPES OF EXPLOSIVES EXCEPT LETHAL CHEMICAL AGENTS AND MATÉRIEL, technical instructions will be furnished by the Commander, U.S. Army Matériel Readiness Command, Rock Island, IL 61299.

3. FOR LETHAL CHEMICAL AGENTS INCLUDING VESICANTS AND NERVE AGENTS AND THEIR CARRIERS, technical instructions will be furnished by the U.S. Army Armament Material Readiness Command Program Manager for the Demilitarization of Chemical Matériel; Edgewood Arsenal, Aberdeen Proving Ground, Maryland 21010.

4. FOR ITEMS PROCURED BY THE DEPARTMENT OF THE NAVY, technical instructions will be issued by the Commander, Naval Sea Systems Command or by the Commander, Naval Air Systems Command, Department of the Navy, Washington, D.C., whichever has technical control of the item.

5. **FOR ITEMS PROCURED BY THE DEPARTMENT OF THE AIR FORCE**, technical instruction will be issued by the Engineering and Reliability Branch (MMWR), Ogden Air Logistics Center, Ogden, Utah 84056.

6. **MISSILES.**

a. Remove and dispose of all classified equipment as directed for Category IX. Remove and dispose of explosive charges as directed for Category IV.

b. Destroy the airframe to airframe section (stage) attaching fittings, leveling and aligning fittings, engine mounts (where applicable), ground handling and launching fittings. Destruction may be accomplished in such a manner as to preserve the utility of the fuel tanks to the extent possible. The tail and forward skirt assemblies, transition assemblies, between tank structure and tail fairing assembly (engine mount section) will be completely mutilated to prevent restoration and assembly. Completely destroy the gyros, accelerometers, and other peculiar electronic equipment in the guidance system and all target selection programming data. Completely destroy the ablative shell, impact detectors, and wire or printed circuitry in the missile and re-entry vehicle. Destruction may be accomplished by cutting with a torch, shearing, crushing, or melting.

CAUTION: All tanks, lines and fittings will be thoroughly decontaminated by technically qualified personnel before proceeding with demilitarization of the airframe.

7. **TECHNICAL DATA** will be demilitarized by burning, shredding or pulping.

**CATEGORY V. MILITARY EXPLOSIVES, SOLID AND LIQUID
PROPELLANTS, BOMBS, MINES, INCENDIARY AGENTS
AND THEIR CONSTITUENTS**

(CATEGORIES IV AND V - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D". For items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

All hand and rifle grenades and similar items of all types, including but not limited to high explosive (fig. 65), practice, inert, incendiary, smoke, tear gas, other chemical, and sectional grenades.

Demolition blocks and blasting caps.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

=====Explosives.

Pyrotechnics.

Propellants.

Propellant fillers.

Cartridges.

Toxic material.

Rotating bands.

Incendiary or smoke content.

Other military design features, and features determined hazardous to the general public.

B. The following items are designated as SME and require key point demilitarization. They are normally assigned a Demilitarization Code "C", however for items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

Key points to be demilitarized: Explosives, pyrotechnics, propellants, propellant fillers, cartridges, toxic material, rotating bands, incendiary or smoke content, other military design features, and features determined hazardous to the general public (**NOTE:** Components, parts, etc., listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

*Military explosives.
Military fuel thickeners.*

Bombs.

Land and Naval mines.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E". However, for items in this category which are considered live AEDA, Demilitarization Code "G" will be assigned:

Boosters, and components therefor (total destruction).

Primers, and components therefor (total destruction).

Incendiary agents (except those having dual military and commercial use) (total destruction).

Fuzes and components therefor (total destruction).

Pyrotechnics (except those having dual military and commercial use) (total destruction).

Missile propellants (total destruction or neutralization).

All compounds specifically formulated for items in this category (except those having dual military and commercial use) (total destruction or neutralization).

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Missile ground handling equipment designed to transport solid or liquid propellants (fuels and oxidizers).

All other components, parts, accessories and attachments not enumerated elsewhere in this category.

All other technical data and defense services directly related to any defense article enumerated in this category.

E. Method and degree of demilitarization: As economically as practicable in accordance with existing environmental standards, safety, and operational regulations, to the point of assuring freedom from explosives, pyrotechnics, propellants, propellant fillers, toxic or incendiary materials, smoke content or design hazard.

1. FOR ITEMS PROCURED BY THE DEPARTMENT OF THE ARMY, technical instructions relating to ballistic missiles, large rockets, and ground handling equipment, as published in the AMCOM Series 43 Technical Manuals, will be furnished by the Commander, U.S. Army Missile Command, ATTN: AMSMI-LC-ME-PP, Redstone Arsenal, AL 35898-5239.

2. FOR CONVENTIONAL, CHEMICAL, AND ALL OTHER TYPES OF ITEMS, EXCLUDING LETHAL CHEMICAL AGENTS AND MATERIAL, technical instructions will be provided by the U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-DSM, Rock Island, IL 61299-6000.

3. FOR CHEMICAL AGENTS AND MATERIALS INCLUDING VESICANTS, AND NERVE AGENTS AND THEIR CARRIERS, technical instructions will be provided by the U.S. Army Program Manager for Chemical Demilitarization, ATTN: SAIL-PM, Edgewood Arsenal, Aberdeen Proving Ground, MD 21010-5401.

4. FOR ITEMS PROCURED BY THE DEPARTMENT OF THE NAVY, technical instructions will be issued by the Commander, Naval Sea Systems Command or by the Commander, Naval Air Systems Command, Department of the Navy, Washington, D.C., whichever has technical control of the item.

5. FOR ITEMS PROCURED BY THE DEPARTMENT OF THE AIR FORCE, technical instructions will be issued by the Engineering and Reliability Branch (MMWR), Ogden Air Logistics Center, Ogden, UT 84056-5609.

NOTE: The figures mentioned below are illustrated in Appendix 7.

6. ARTILLERY/MORTAR COMPONENTS AND SIMILAR ITEMS OF All TYPES (fig 55 through 58) including but not limited to high explosive, practice, inert loaded, incendiary, and smoke fillers. Remove explosive filler from projectile (wash out, burn out, etc.). Remove rotating band or score or deform bourrelet or gas check band or deform fuze cavity threads. Burn propellant unless otherwise instructed to retain for sale or other purposes. Deform fin assembly threads or fin blades. Cartridge cases (not returned to ICA designated contractors) will be deformed by off-center punch-out of primer or split case neck or puncture the lower sidewall with a minimum of 3/4 inch hole or deform lower sidewall, which will prevent chambering, or crush or press. Burn out smoke mixture or detonate smoke canister.

7. BOMBS AND SIMILAR ITEMS OF ALL TYPES, including but not limited to high explosive, practice, inert loaded, incendiary and photoflash fillers, military explosive excavating devices, demolition blocks and grenades. Demilitarization **will** be accomplished by removal of explosive filler in an approved manner (e.g., wash-out, burn-out, etc.) **and by** deforming fuze cavity threads or removing base plate by other than normal disassembly (such as sawing) or by detonation. **Grenades will be demilitarized by cutting or crushing (a minimum of 75% compression) the grenade body after item has been defuzed and explosive removed or by detonation.**

8. SMALL EXPLOSIVE ITEMS, including but not limited to fuzes (figures 59 and 60), boosters, primers, detonators, firing devices (fig. 61), ignition cartridges, blasting caps, grenade cartridges, tracer assemblies and similar components. Demilitarization can be accomplished by processing through a deactivation furnace at settings of 1150 degrees at burner end and 450 to 500 degrees at stack end or by mutilation. Incendiary projectiles will normally be decored to expose and assist in the complete burning of the incendiary composition. Where decoring of projectile is not necessary, processing through the deactivation furnace is adequate. Burn out 20MM HE projectiles by processing through the deactivation furnace or detonate. Processing complete small arms ammunition cartridges, all calibers, through the deactivation furnace at controlled temperatures will result in adequate demilitarization. Fuzes and boosters can be disposed of by disassembly and cutting, drilling, or punching to deform metal parts. Explosive components generated through disassembly are to be burned or detonated. Fuzes may also be processed through a deactivation furnace as a complete item when disassembly is not feasible. For grenades demilitarization may be accomplished by removal of explosive components by crushing, cutting, breaking, melting, burning, or otherwise to fully preclude their rehabilitation or further use as grenade components. Demilitarization may also be accomplished by detonation or burning as appropriate for the particular item involved or by deep water dumping at sea.

9. OTHER NONEXPLOSIVE FILLED ITEMS which perform a major function essential to the basic mission of the end item. Cut, crush, or process through a deactivation furnace. Burn or cut cartridge case lines and propelling charge bags. Cut, crush burn, or crush aircraft and ground signal cases. Crush or detonate

piezoelectric (lucky) elements. Crush, cut or deform threads as appropriate on stabilizer tube or fin of grenade adapters; rifle grenade fin assemblies; stabilizer tube-fin assembly, rifle grenade; rifle grenade ogive; rocket launchers (fig. 63), mine arming plugs, shape charge stand-offs and similar items.

10. ROCKET MOTORS, WARHEADS, COMPONENTS AND SIMILAR ITEMS OF ALL TYPES, including high explosive, inert loaded, practice and smoke. Wash out or burn out rocket warhead filler and mutilate casing by crushing or cutting by torch or deforming threaded area. Disassemble and remove or burn out rocket motor propellant and cut, crush case, or deform threaded area of cases. Rocket motors and warheads may also be detonated.

11. MINES, ANTI-PERSONNEL/ANTI-TANK (fig. 64), EXPLOSIVE COMPONENTS AND SIMILAR ITEMS OF ALL TYPES including high explosive, practice, inert loaded and associated explosive components. Wash out or burn out filler and mutilate casing by crushing, cutting by torch, deforming threaded area or detonate. Process mine fuzes, activators, and firing devices through a deactivation furnace, burn in a cage or detonate. Mine firing devices such as the M56 or M61 types should be crushed, cut, or burned.

12. INERT LOADED PROJECTILES, WARHEADS AND SIMILAR ITEMS OF ALL TYPES loaded with inert filler to simulate service item. Remove rotating band from artillery projectiles and open the closure of the projectile body to expose the inert filler. On items without rotating bands, open the body closure to expose the inert filler and damage the closure surface to prevent reloading or resealing.

NOTE: For inert loaded bombs (concrete, sand, plaster) a potential explosive safety hazard exists when the internal filler is not exposed or unconfined during burning, melting or cutting. Heat generated from a demilitarization process can cause the filler, moisture and air to expand and burst sealed casings. For this reason, DRMOs will not accept inert loaded bombs unless the internal filler is exposed and unconfined. The internal filler may be exposed by removal of the fuze well from the cavity, removal of base plates, or by puncturing/drilling holes in the bomb casing.

13. INSTRUCTIONS FOR SPECIFIC ORDNANCE ITEMS:

a. BDU-50 Practice Bomb:

(1) Each bomb must be inspected by qualified EOD/UXO personnel to ensure that bombs are BDU-50s and that the bomb is expended. If the EOD/UXO personnel cannot verify both fuze wells, or absence thereof, it must be opened remotely by detonation.

(2) A 1/4 inch hole will be punched in each of the two spanner wrench receptacles, fracturing the metal to a depth in excess of 1/10 inch into the concrete filler material.

(3) A 1/4 inch punch will be utilized to further damage the threads of the nose plate, ensuring that the plate cannot be removed and replaced.

(4) Fins will be deformed or broken and paint will then be used to place a mark of contrasting color on the bomb or near the nose.

14. TECHNICAL DATA will be demilitarized by burning, shredding or pulping.

CATEGORY VI. VESSELS OF WAR AND SPECIAL NAVAL EQUIPMENT

(CATEGORY VI - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Protective systems.

Catapults.

Arresting gear.

*Submarine storage batteries (**propulsion related**).*

Armament.

Hulls (warships only).

Mine sweeping equipment and components, parts, attachments and accessories specifically designed or modified therefor.

Mine countermeasures equipment deployed by aircraft.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

*Key points to be demilitarized: Armament, hulls (warships only), applicable items designated in other Categories in this appendix, and other items designated by the Naval Systems Commands or other procuring Military Services/Defense Agencies and as indicated under paragraph E. below (**NOTE:** Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").*

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Warships, including any ship originally built as a warship but later modified to a different configuration and any vessel specifically designed or modified for military purposes.

Amphibious warfare vessels.

Mine warfare vessels.

Landing craft.

Patrol vessels with armor, armament and/or mounting surfaces for weapons systems.

NOTE: A list of these types of ships is included under the heading "Vessels of War and Special Naval Equipment" in Appendix 2, this manual.

Turrets and gun mounts (see Category II for key points).

Missile systems (see Categories III and IV for key points).

Special weapon systems (see Categories III, IV, XI, and XII for key points).

Naval nuclear propulsion plants, their land prototypes, and special facilities for their construction, support and maintenance. This includes any machinery, device, component, or equipment specifically developed, designed or modified for use in such plants or facilities.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Minesweeping equipment and components, parts, attachments and accessories specifically designed or modified therefor.

Harbor entrance detection devices, (magnetic, pressure, and acoustic) and controls and components therefor.

Specifically designed or modified key components, parts and accessories, attachments and associated equipment not otherwise enumerated above.

All other technical data and defense services directly related to any defense article enumerated this category.

E. Method and degree of demilitarization:

1. **WARSHIPS:** Armament will be demilitarized as prescribed for Categories I and II above. Hulls will be demilitarized by scrapping, except, with respect to destroyers and destroyer escorts, the portion of the hull to which the power plant is attached need not be cut.

2. **OTHER COMBATANT SHIPS,** including but not limited to, amphibious warfare ships, landing craft, tracked landing vehicles, mine warfare vessels, etc., will be demilitarized the same as warships, except hulls do not have to be demilitarized.

3. **TECHNICAL DATA** will be demilitarized by burning, shredding or pulping.

4. **OTHER ITEMS** designated in this appendix will be demilitarized as prescribed by the appropriate Naval Systems Commands or other procuring Military Services/Defense Agencies.

CATEGORY VII. TANKS AND MILITARY VEHICLES

(CATEGORY VII - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Tanks of all types.

Military recovery vehicles.

Gun carriers.

Other military type armed or armored vehicles.

Bridge launching vehicles.

Half-tracks.

Amphibious vehicles.

Military engines specifically designed, modified or configured for the vehicles in this Category.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Key points to be demilitarized: Arms, armor, applicable items designated in other Categories in this Appendix, and other items designated by the procuring Military Services/Defense Agency and as indicated under paragraph E. below (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Vehicles specifically designed or modified to accommodate mountings for arms or other specialized military equipment or fitted for such items (key points are all armor, mountings, and fittings).

Commercial engines specifically modified or configured for the vehicles in this Category.

Self-propelled guns, mortars and howitzers (key points are all armor, engines specifically designed, modified or configured for the item, and as prescribed in Category II above).

Military railway trains (key points are all armor, weapons and weapons fittings/mounts).

Combat engineer vehicles (key points are all armor, weapons and weapons fittings/mounts).

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Tank track and track components including, but not limited to road wheels, idler arms, sprockets, final drives, etc. (Rubber track pads are not included.) These items require total destruction overseas or prior to export from the U.S. only.

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Rubber track pads.

Specifically designed or modified components, parts, accessories, attachments and associated equipment not otherwise enumerated above including but not limited to military bridging equipment and deep water fording kits.

All other technical data and defense services directly related to any defense article enumerated this Category.

E. Method and degree of demilitarization:

NOTE: The figures mentioned below are illustrated in Appendix 7.

1. **ARMAMENT** will be demilitarized as prescribed for Categories I and II, above. Demilitarization of main armament (such as gun, howitzer, mortar or rocket launcher) on combat vehicles may be accomplished on the vehicles (figure 17) or after removal from the vehicles.

2. **ALL HINGE-MOUNTED ITEMS** (such as doors, ramps or hatches) will be removed from the vehicle prior to cutting the hull.

3. **TURRETS AND/OR CUPOLAS** will be cut into two sections as shown in figure 17 and removed prior to cutting the hull.

4. **HULL:**

a. The top section of the hull on all vehicles will be cut into four sections without affecting the suspension, as shown in figures 17, 18, and 19. To accomplish the hull cuts, a complete circumferential cut will be made at or just above the track or wheel level and cuts will be made across the top of the hull from the front center to the rear center (longitudinal) and from the left side center to the right side center (transverse).

b. A rectangular section of the hull front armor plate, starting at the circumferential cut and extending to the floor line, will be removed. The width of the section will be determined by making the widest cut possible without affecting the suspension.

5. **HARD TARGETS.** Tanks and vehicles covered under this Category and utilized as hard targets must be demilitarized in accordance with this manual within one year of issue as a hard target. A copy of the demilitarization certification must be provided to U.S. Army TACOM, Attn: AMSTA-IM-OER, Warren, MI,

48397-5000. NOTE: *Damage sustained to a vehicle used as a hard target does not necessarily constitute demilitarization. Destruction must, at minimum, satisfy the provisions of this regulation.*

6. TECHNICAL DATA *will be demilitarized by burning, shredding or pulping.*